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(54) **CHEMICAL REACTOR AND METHOD FOR
GAS PHASE REACTANT CATALYTIC
REACTIONS**

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(57) **ABSTRACT**

The present invention is a chemical reactor and method for catalytic chemical reactions having gas phase reactants. The chemical reactor has reactor microchannels for flow of at least one reactant and at least one product, and a catalyst material wherein the at least one reactant contacts the catalyst material and reacts to form the at least one product. The improvement, according to the present invention is: the catalyst material is on a porous material having a porosity that resists bulk flow therethrough and permits molecular diffusion therein. The porous material further has a length, a width and a thickness, the porous material defining at least a portion of one wall of a bulk flow path through which the at least one reactant passes.

18 Claims, 3 Drawing Sheets

